

SMS – 1

AIREDALE

air conditioning for every environment

INSTALLER'S GUIDE

MODEL SMS-1

IMPORTANT — This Document is customer property and is to remain with this unit. Please place in service information pack upon completion of work.

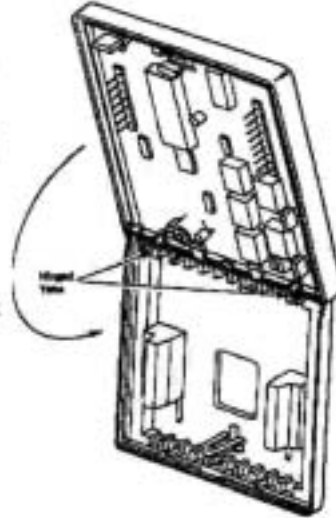


Since the manufacturer has a policy of continuous product improvement, it reserves the right to change specifications and design without notice. Installation and servicing of the equipment referred to in this booklet should be done by qualified, experienced technicians.

REATTACHING THE THERMOSTAT AND COVER TO THE INSTALLED BASE

1. Position the thermostat inside the cover, and attach on the hinged tabs located at the top of the base.
2. Swing the thermostat and cover down, and press on the bottom center edge until they snap in place. (See Figure 5)

Figure 5: Installing the Thermostat



DIPSWITCH/JUMPER SELECTIONS

Table 1: DIPswitch Selections

	Switch Selections	Description
1	4 events/2 events per day	Allows selection of 2-event (day, night) or 4-event (morning, day, evening, night) programming
2	Smart Fan disabled/enabled	The fan will cycle with the equipment or can be controlled by selecting continuous fan in all events except when the Smart Fan is enabled. When Smart Fan is enabled, the fan will cycle with the equipment in the night event even if continuous fan is pressed.
3	Heat/Cool: 4 or 2 minute minimum on and off	Allows selection of minimum on/off time for heating or cooling equipment. See CAUTION .
4	Keyboard unlocked/locked	Allows user to disable buttons to prevent tampering.
5	Fan immediate w/heat call; on w/plenum switch	System fan is operated by thermostat or by equipment
6	Single stage/ Multistage	Allows designation of multiple stage heating or cooling
7	LED1 icon off/on (See Table 5)	Optional selection: LCD icon comes on with LED1
8	LED2 icon off/on (See Table 5)	Optional selection: LCD icon comes on with LED2



Figure 6a: Factory Set DIPswitch Settings (All Off)

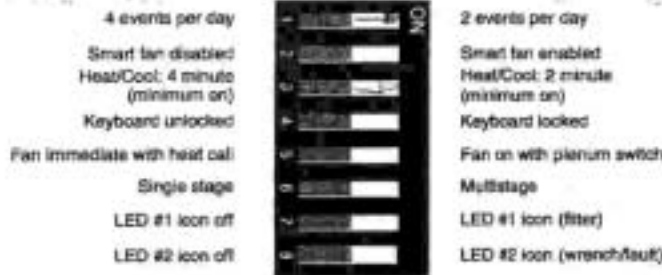


Figure 6b: Wiring Terminals (see TABLE 2)

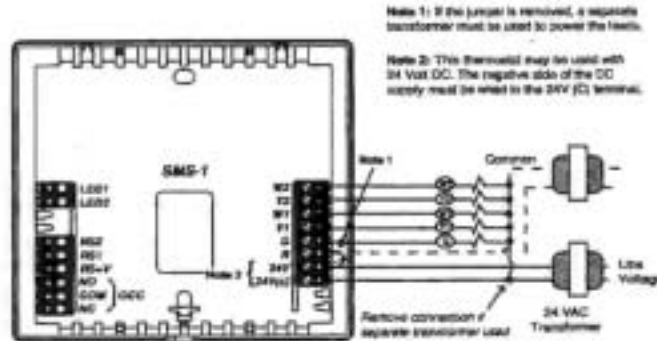


Table 2: Output Terminal Designations

Terminal	Function
W2	Energizes on call for second stage heat
Y2	Energizes on call for second stage cooling
W1	Energizes on call for first stage heat
Y1	Energizes on call for first stage cooling
G	Energizes fan on call for heating or cooling or by pressing fan button
R*	Independent switching voltage (See note)
24V*	24 VAC from equipment transformer
24V(c)	24 VAC (common) from equipment transformer
O	Energizes reversing valve in the cooling mode
LED1 LED2	Input connections that energize LED1 or LED2 from remote status device (See Figure 6a and Table 3)
RS2 RS1 RS+V	Connections for outdoor air temperature or indoor remote sensors; refer to instructions included with sensors
NO COM NC	The relay coil is de-energized in the night event. In all other events, the relay coil is energized.

NOTE: Remove the factory installed jumper between R and 24V when separate transformers are used to power the loads and the thermostat.

Do not remove the jumper when power is supplied by a single transformer.

COMMISSIONING

The thermostat normally displays room temperature and mode of operation (whether cooling ❄ or heating 🔥 is currently on.)

Table 3: LED Indicators

LED Position	Function
Left	Controlled by external switch on LED1. The filter symbol can be selected.
Center	Indicates when highest stage heat is activated. Internally controlled.
Right	Controlled by external switch on LED2. The wrench symbol can be selected.

THERMOSTAT OPERATION OVERVIEW

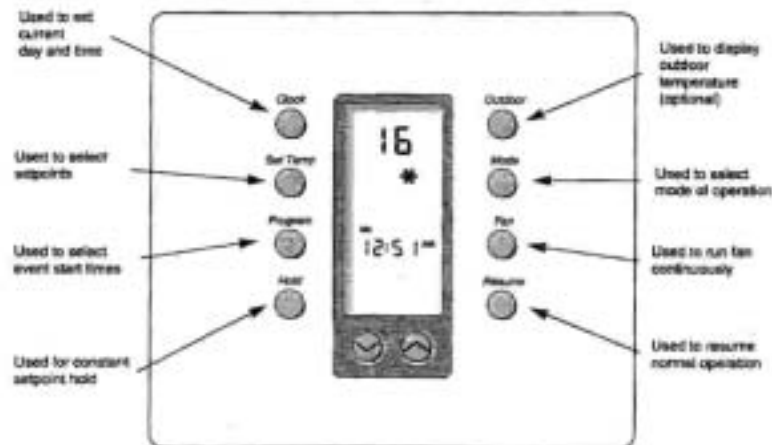


Figure 7: Programmable Pushbuttons

Mode

Repeated pressing of the **Mode** button allows selection from four modes of operation.

- When the **Snowflake** (❄) and the word **COOL** are displayed, the thermostat is in the cooling mode. When the thermostat is calling for cooling, the snowflake will flash.
- When the **Flame** (🔥) and the word **HEAT** are displayed, the thermostat is in the heating mode. When the thermostat is calling for heating, the flame will flash.
- When the **Snowflake** (❄) and the **Flame** (🔥) symbols and the word **AUTO** are displayed, the thermostat will automatically change over between heating and cooling.

NOTE: The thermostat never allows less than a 2°F (1°C) difference between the heating and cooling setpoints.

- When **OFF** is displayed, the equipment will not operate.

NOTE: Use caution when using the OFF mode in extremely cold weather.


Celsius/Fahrenheit

Press the ▼ and ▲ buttons simultaneously to alternate between Celsius and Fahrenheit display.

Fan

If continuous fan is not selected, the fan will operate automatically and the fan symbol will be off. To select continuous fan operation, press the fan button. The fan symbol () will be displayed. (See Figure 8)

Outdoor Button

When an outdoor temperature sensor (order separately) is connected to the Programmable thermostat, you can display the current outdoor temperature by pressing the OUTDOOR button. If the sensor option is not connected, the thermostat will display .

Programming Overview

Thermostat programming is a three-part process: setting current time, choosing event setpoints and setting event times. Throughout the programming procedure, the following terms will be used:

Event = morning, day, evening, night

Event time = the time the event starts

Event setpoint = the setpoint of the event; each event can have only one setpoint for heating and one setpoint for cooling.

Program flexibility is achieved by varying the program start times.

Table 4 is an example of event times and setpoints for a given week.

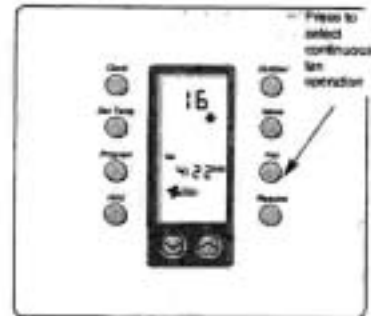






Figure 8: Selecting Continuous Fan Operation

NOTE: A two-event program will only include day and night.

Table 4:

Sample program settings

Event	Morning 		Day 		Evening 		Night 	
	Heat: 20°F	Cool: 27°F	Heat: 22°F	Cool: 24°F	Heat: 19°F	Cool: 26°F	Heat: 16°F	Cool: 25°F
	(Time)		(Time)		(Time)		(Time)	
Monday	8 a.m.		8 a.m.		5 p.m.		11 p.m.	
Tuesday	6 a.m.		8 a.m.		5 p.m.		11 p.m.	
Wednesday	6 a.m.		8 a.m.		5 p.m.		11 p.m.	
Thursday	6 a.m.		8 a.m.		5 p.m.		11 p.m.	
Friday	6 a.m.		8 a.m.		5 p.m.		11 p.m.	
Saturday	6 a.m.		6 a.m.		12 p.m.		12 p.m.	
Sunday	12 p.m.		12 p.m.		12 p.m.		12 p.m.	

Thermostat controls to the day setpoint until noon.

Thermostat controls to the night setpoint until 6 a.m. Monday morning.

PROGRAMMING THE THERMOSTAT

Setting the Current Day and Time

To set the current day and time:

1. Press and release the **CLOCK** button. The display will flash a day of the week.
2. Press the **▼** or **▲** buttons until the current day shows.
3. Press **CLOCK** again. The display will flash the hour.
4. Press the **▼** or **▲** buttons until the current hour shows. Be sure AM or PM corresponds to the proper time.
5. Press **CLOCK** again. The display will flash minutes (:00). (See Figure 9.)
6. Press the **▼** or **▲** buttons until the current minutes show.
7. Press **CLOCK** to complete the procedure or wait 15 seconds to return to normal display.

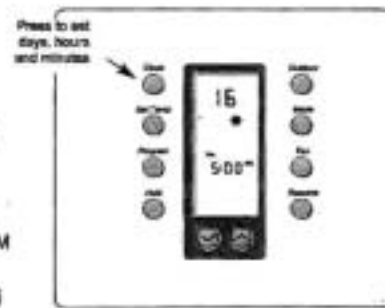


Figure 9: Setting the Current Day & Time

Setting the Event Setpoints

Setpoints are programmed for both heat (♠) and cooling (♣) modes, and either 2 (day and night) or 4 (morning, day, evening, and night) events per day. (See Table 1.)

1. Press the **MODE** button until heat (♠) is displayed.
2. Press the **SET TEMP** button. The mode (heat, cool or auto), event (morning, day, evening or night) symbols, and the present setpoint will be displayed.
3. Press the **▼** or **▲** buttons to adjust setpoints for the displayed event and mode.
4. Press **SET TEMP** to move to the next event. Press the **▼** or **▲** buttons to adjust the setpoint. Repeat this step until all event setpoints are programmed.
5. Press **MODE** until cooling (♣) is displayed and repeat Steps 2 through 4.
6. Select the desired mode of operation: heat, cool, auto.

7. When programming is complete, press the **RESUME** button to return to the normal display.

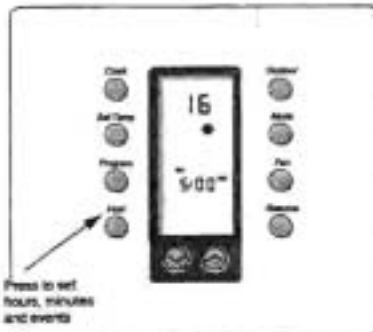


Figure 10: Setting the Event Times

Setting the Event Times

1. Press and release the **PROGRAM** button. The morning event symbol (☀) and the current day appear.
2. Press the **▼** or **▲** buttons to select the day to be programmed.
3. Press and release **PROGRAM**. Press the **▼** or **▲** buttons to set the start time hour for the first event.
4. Press and release **PROGRAM**. Press the **▼** or **▲** buttons to set the minutes in 10 minute intervals, i.e. 8:10, 8:20, etc.
5. Press **PROGRAM** to advance to the next event.
6. Repeat steps 3 through 5 for all remaining events. After programming the last event, press **PROGRAM**. "COPY" will be displayed.
7. If you do not want to copy the program, press **PROGRAM** and proceed to Step 9. To copy the program, press the **▼** or **▲** buttons to select individual days to copy the program to. The COPY function will only allow program times to be copied to sequential days, i.e. Tuesday, Wednesday, Thursday.

8. Press **PROGRAM** to copy program settings to the selected days of the week.
9. Repeat the procedures for *Setting the Event Times* for any remaining unprogrammed days of the week.
10. When finished, verify that all events are programmed correctly by repeatedly pressing the **PROGRAM** button. When "COPY" appears, press **PROGRAM** to skip to the next day.
11. When programming is complete, press **RESUME** to return to normal display.

NOTE: See Table 4 for an example of programming for a given week.

Scheduling 1-, 2-, 3- and 4-Event Days in the Same Week

If the DIPswitch is set for 4-event days, a 2-event day can be programmed by setting the same event time for consecutive events. See the example shown in Table 4.

Override

Constant Hold

To maintain a constant temperature setting:

1. Press the **MODE** button until the desired mode is displayed (heating, cooling, auto.)
2. Press the **▼** or **▲** buttons to set the desired setpoint(s).

NOTE: If the auto mode is used, press **MODE**, and press the **▼** or **▲** buttons to select a heating setpoint. Press **MODE** again, and the **▼** or **▲** buttons to select a cooling setpoint.

3. Press the **HOLD** button. Setpoint(s) will be maintained continuously.
4. Pressing and releasing the **RESUME** button will cancel the **HOLD** and return to programmed setpoints.

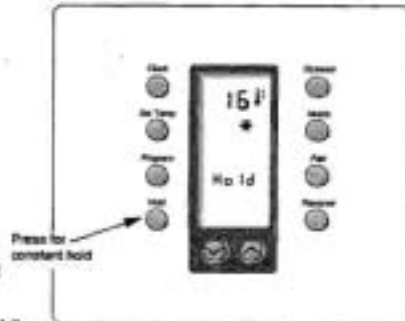



Figure 11: Constant Override (Hold)

Temporary (3 Hour)

To implement a temporary change from the current event setpoint for a 3-hour period:

1. Press the **▼** or **▲** buttons to change the scheduled setpoint. The current mode of operation will appear on the display and an hourglass symbol  will appear. The temporary setpoint will be maintained for 3 hours.
2. Pressing and releasing the **RESUME** button will cancel the override and return to the programmed setpoint at any time during the 3 hours.

NOTE: If the Auto mode is used, press the **▼** or **▲** buttons to select heat or cool setpoint (indicated by the word "heat" or "cool"), press **MODE** to switch displayed temperature, then press the **▼** or **▲** buttons to select the opposite setpoint.

Temporary Temperature Override with Keyboard Locked

You can change the scheduled program temperature by a maximum of $\pm 3^\circ$ (F or C) at any time without affecting the program. Pressing the **▼** or **▲** buttons temporarily changes either the Morning setpoint (using 4 programs per day) or the Day setpoint (using 2 programs per day) for a 1 hour period. This 1 hour override period cannot be cancelled (keyboard is locked.)

1. TROUBLESHOOTING

Symptom	Possible Cause	Corrective Action
No display/ faint display ...	Supply voltage incorrect	Use a voltmeter to check the voltage between the 24V and 24V(c) terminals. Voltage should be between 20-30 VAC. If voltage is less than 20 VAC, disconnect the thermostat and check the voltage between 24V and the other system wires; see possible causes below. If voltage is greater than 30 VAC, troubleshoot the power source and replace the thermostat.
	System transformer weak or overloaded	Check and/or replace with a suitable 24V transformer.
	Thermostat damaged because system voltage was greater than 30 VAC	Replace with new thermostat and ensure new thermostat is isolated from the system using suitable relays and a transformer of the proper rating.
Keyboard inoperative ...	Keyboard locked	Switch the keyboard DIPswitch to the unlocked position.
Thermostat will not call for heat ...	Compressor delay still in progress	Wait ... equipment short cycle protection in progress.
	Thermostat setpoint is satisfied	Raise the heating setpoint using the ▲ button.
Thermostat will not call for cooling ...	Compressor delay still in progress	Wait ... equipment short cycle protection in progress.
	Setpoint is satisfied	Lower the cooling setpoint using the ▼ button.
Fan does not turn on ...	Fan failure	Place a jumper between terminals R and G. Fan should come on. If it does not, troubleshoot the fan system. If fan does come on, replace the thermostat.
"AC" appears on the LCD ...	20-30 VAC is absent from 24V and 24V(c)	Using the voltmeter, measure voltage between the 24V and 24V(c) terminals. If the reading is less than 20 VAC, check system transformer. If the voltage is between 20 and 30 VAC, replace the thermostat.
LCD shows missing or extra segments ...	LCD failure	Replace the unit.
1 Events Per Day	DIPswitch #1 is "Off"	Switch DIPswitch #1 to "On", for 2 events per day.
2 Events Per Day	DIPswitch #1 is "On"	Switch DIPswitch #1 to "Off", for 4 events per day.
Fan runs continuously during unoccupied mode	DIPswitch #2 is "Off"	Switch DIPswitch #2 to "On". When continuous fan is selected, fan will run continuously in the occupied mode and only with equipment in unoccupied mode.
Minimum On time too long causing overshoot	DIPswitch #3 is "Off"	Switch DIPswitch #3 to "On". This will decrease minimum run from 4 min. to 2 min.
Minimum On time too short	DIPswitch #3 is "On"	Switch DIPswitch #3 to "Off". This will increase minimum run from 2 min. to 4 min.
Keys won't operate – lock symbol appears on LCD	DIPswitch #4 is "On"	Switch DIPswitch #4 to "Off". This will unlock the keyboard.
Fan comes on with immediate call for heat	DIPswitch #5	Switch DIPswitch #5 to "On". Fan will now operate with the plenum switch of the equipment.
2nd Stage Heat/Cool or Compressor won't come on	DIPswitch #6 is "Off"	Switch DIPswitch #6 to "On". Thermostat is now set for multi-stage operation.

SPECIFICATIONS

Power Requirements	20-30 VAC, 50/60 Hz, 24 VAC nominal
Relay Outputs	
Rated AC/DC Current	0.75 amps continuous output with surges to 3 amp maximum
Thermostat Measurement Range	28 to 124°F (0 to 48°C)
Outdoor Air Temperature Indication Range	-50 to 124°F (-48 to 48°C)
Control Range	Heating: 38 to 88°F in 1° steps, 5 to 30°C in 1° steps Cooling: 60 to 108°F in 1° steps, 16 to 40°C in 1° steps
Control Accuracy	± 1°F at 68°F (± .5°C at 20°C)
Minimum Deadband	(between heating and cooling) 2°F or 1°C
°C / °F Conversion	20°C = 68°F, each degree above or below 20°C = 2°F
Dimensions (H x W x D)	4½ x 5 x 7/8 in. (114.3 x 127 x 22.2 mm)
Shipping Weight	0.45 lbs. (0.204 kg)